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ABSTRACT

The New Designs for the Comprehensive High School (NDCHS) project was conducted to develop design processes and specifications for developing new comprehensive high schools, and for restructuring existing schools in accordance with the comprehensive high school model. The project's impact on student learning at two early adapters of the recommendations--the School of Environmental Studies (SES) at the Minnesota Zoological Gardens and the St. Louis Career Academy (SLCA) in Missouri--was examined by reviewing available data at each school and meeting with representatives from each school. The NDCHS design elements adopted most intensely by the SES were as follows: learning signature, learning process, learning organization, learning staff and staff development, and learning environment. At the SLCA, the NDCHS element with the highest intensity of implementation was learning environment, and the areas of least intensity were learning signature, learning process, learning partnerships, learning celebration, and learning finance. NDCHS is now part of a larger project entitled New Designs for Learning (NDL), and NDL will continue to study the impact of the original recommendations. (Contains 26 references and 11 tables. Appended are the following: example requirements for certificate of prerequisite to internship placement at SLCA; table of contents to student reference guide to foundation skills at school of environmental studies; vision, mission, and beliefs of SES; and listings of articles about SES and SLCA.) (MN)

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IMPACT OF NEW DESIGNS FOR THE COMPREHENSIVE HIGH SCHOOL: EVIDENCE FROM TWO EARLY ADAPTERS

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PREFACE

The research and development project, New Designs for the Comprehensive High School (NDCHS), was initiated by the National Center for Research in Vocational Education (NCRVE) in 1991 with funding from the Office of Vocational and Adult Education in the U.S. Department of Education. The initial two years of work involved an extensive review of related research and best practices in high schools in the United States and several other countries; site visits and focus group interviews with high school students, staff, and administrators in several schools across the country; and deliberations by a national design group representing teachers, administrators, state education agencies, teacher educators, researchers, and business and industry members. Resulting from this effort were recommendations regarding a design process, design specifications for new and restructured high schools, and benchmark sites illustrating the design specifications in practice. Since that time, the results of the project have been presented to hundreds of audiences in professional meetings, school site meetings, state education agencies, undergraduate and graduate classes and symposiums, and international forums. A question frequently asked in these presentations and workshops concerns the impact of the design recommendations on student learning (i.e., Does student learning improve if the recommendations are followed?).

This study provides initial evidence about impact on student learning for two schools that were early adapters of the recommendations and have been in operation long enough to have evidence on learning achievement—(1) the School of Environmental Studies (SES) at the Minnesota Zoological Gardens and (2) the St. Louis Career Academy (SLCA) in Missouri. The two schools have unique histories and contexts which are pertinent to the ways that they have used the recommendations of NDCHS and the learning results they were able to demonstrate. Both schools have gained considerable national status and recognition for the quality and innovative character of their practices. To claim that the learning results are all attributable to their adapting the recommendations of NDCHS would be naive; rather, we can say the results happened, and the adaptations were present.

Both school sites were new schools, and both applied many of the recommendations advanced by NDCHS. Each school had existing data available on student achievement. The study's funding level did not permit gathering a significant amount of new data; rather a strategy was developed to use data that already existed.

This project was part of a larger effort of the NCRVE to focus on high schools that were undergoing schoolwide reform and making use of their learning achievement results to further improve their schools. Accordingly, the study questions and procedures were designed to engage the stakeholders and staff of the schools in deciding what questions were important to them and what data would be required to answer these questions.

The first section of the report describes the context and planning efforts employed in developing each of the two selected schools. The second major part focuses on a description of both schools using the design framework of NDCHS to give the reader a sense of the degree of adaptation of its recommendations. The last section addresses impact on learning and implications for practice, policy, and further research for those interested in or already guiding whole school reform.

Special thanks are extended to Dr. Dan Bodette at the SES and Dr. Larry Hutchins at the SLCA for their work in providing data, making meeting arrangements for this report, and reviewing the final draft. Also appreciation is due to the students, teachers, administrators, parents, and community representatives and partners who provided assistance in developing the guiding questions, special features, and future directions for the two schools. NDCHS has greatly benefited from the support of the NCRVE headquartered at the University of California, Berkeley since the project's start and from the Department of Work, Community, and Family Education at the University of Minnesota where the project was located for its first eight years. The Office of Vocational and Adult Education in the U.S. Department of Education has been very gracious in its financial support and professional encouragement and recognition of its work.

NDCHS is now part of a larger project entitled New Designs for Learning (NDL) which is located at the School of Education at Oregon State University. The project continues to work nationally and internationally with schools that have interest in "stepping out" in terms of innovation toward making the students' learning experiences more rewarding in process and results.

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December 1999

INTRODUCTION

Purpose of Project

The purpose of this project is to identify and describe the impact of New Designs for the Comprehensive High School (NDCHS) (Copa & Pease, 1992) on student behavior, attitude, and performance. This project was part of the larger NCRVE project on Enabling High Schools to Assess Schoolwide Results of Reform. The project focused on two schools with experience implementing NDCHS: (1) the School of Environmental Studies (SES) in Minnesota and (2) the St. Louis Career Academy (SLCA) in Missouri. Indicators of impact on learning included indirect and direct measures of student performance. Contribution to student learning is a common question regarding NDCHS. Until now, there has not been a sufficient length and scope of implementation of NDCHS to be able to reasonably assess its impact on learning. The two institutions noted above had enough information available to provide a preliminary assessment of impact on learning, ways to continue to improve their schools, and the NDCHS design process. NDCHS incorporates many of the major thrusts of research conducted over the past ten years by NCRVE (e.g., integration of academic and vocational education, articulation of secondary and postsecondary educational levels, coordination of school- and community-based learning).

Linkage to Larger Effort

This project is linked to a larger effort by the NCRVE entitled, Enabling High Schools to Assess Schoolwide Results of Reform. The larger project continues work begun in 1998 to assess schoolwide change and empower schools to use that information for continuous improvement.

During 1998, staff of the larger project worked with 30 High Schools That Work (HSTW) schools to assess a schoolwide sample of their seniors using the HSTW assessment. Through the At Your Fingertips Continuation Project, staff also worked with four Bay Area School Reform Collaborative (BASRC) schools to gather data on key performance measures, including standardized test results, GPA, and attendance rates. Beginning in 1999, the project began an intensive program of technical assistance and qualitative data gathering at ten HSTW sites to assist these schools in interpreting and using

schoolwide assessment data and to better understand how data analysis fits into their reform efforts. In addition, the 1999 project continued working with four BASRC high schools, added two schools from the NCRVE project, NDCHS, and conducted a meeting for representatives from these three school networks. This report is the result of the work with the two schools applying NDCHS. The work with the NDCHS schools had the benefit of the earlier and continuing work of the larger project described previously. All of the schools involved had an opportunity to meet together and share their results during the summer of 1999 at the HSTW annual conference in Atlanta, Georgia. In addition to immediate and lasting benefits for the schools involved, the larger project will produce a report that will guide other groups of schools in using whole-school data for school improvement.

Project Sites

The School for Environmental Studies (SES) at the Minnesota Zoo is an optional high school in the Rosemount/Apple Valley/Eagan School District. The district has 28,500 students and is located in the southern suburbs of Minneapolis, Minnesota. The school was designed and built from 1993-1995 and opened in 1995. The school houses 400 juniors and seniors in a facility built on the site of the Minnesota Zoological Gardens. It is a full-day school offering a complete program of curricular opportunities. Attending students come from the district's four large comprehensive high schools.

School choice has long been a consideration in Minnesota, and this school was created to provide 11th and 12th grade students with a focused curriculum revolving around environmental studies. The traditional disciplines are integrated within the context of studying the environment. At the core of the program are interdisciplinary houses of 100 students and three instructors—one licensed in communications, one in social studies, and one in science. Students stay with the same house and with the same teaching team through the entire year. Other teachers and mentors support learning shared among the houses. Curriculum in each house is designed around significant themes in environmental studies, such as issues of sustainable development and environmental health. The school's mission of fostering young people as leaders in the community is encouraged by asking students to address real problems within their communities and design solutions for those problems.

The SES has completed its fourth year of operation (Goodwin, Haisting, & Tunseth, 1996; Jilk, 1994). The school has gathered information on academic performance and student attitudes. Information is available regarding demographic characteristics of students and performance at the school. This school was cited as one of three very innovative schools in *The Wall Street Journal* (Carms, 1997) and was selected for a site visit by Assistant Secretary of Education Patricia McNeil in conjunction with President Clinton's public address on school modernization during the opening week of school in September 1998. The American Institute of Architects also selected the school as a model school environment. As this report was being concluded, the SES was selected by the U.S. Department of Education as a New American School.

The SLCA opened its doors in September 1996 to 240 freshmen. At the beginning of this project, it was in the middle of its third year of operation with about 400 students in grades 9-11. The original plan was for the SLCA to be a four-year high school with about 400 students. The mission of the school is to prepare students "for entry into the job market and [to be] ready to continue their learning in union apprenticeships, at technical schools, community colleges, and professional undergraduate programs" (St. Louis Career Education District, 1998a, p. 14). Key features of the Academy are personalization of learning through a computer-based learning system, project-based learning, career exploration, and work-based learning. The Academy was selected by the U.S. Department of Education as a New American School in 1998 with the added special designation of being a "New Urban School" (The Big Picture Company, 1998). The New American Schools (U.S. Department of Education, 1998) are "schools where all students are expected to meet both challenging academic standards and acquire the communications, problem-solving, computer and technical skills necessary to pursuing college and careers" (p. 1). Criteria for selection of schools to receive this designation include the following:

- All the core activities of the school concentrate on student learning and achievement.
- All students are expected to master the same rigorous academic material.
- Staff development and planning emphasize student learning and achievement.
- The curricula are challenging and relevant, and they cover materials in depth.

- Schools are using new forms of assessment.
- Students get extra support from adults.
- Students learn about careers and college opportunities through real-life experiences.
- Schools create small, highly personalized, and safe learning environments.
- Technology is integrated into the classroom to provide high-quality instruction, and students have opportunities to gain computer and other technical skills.
- Periods of instruction are longer and more flexible.
- Strong partnerships are forged with middle schools and colleges.
- Schools form active partnerships with parents, employers, community mentors, and policymakers to promote student learning and ensure accountability for results.

According to the description of the school provided by The New Urban School Network (1999), it is organized into three "houses" of about 115 students, one for each grade level. Each house has a team of five teachers, an administrator, and a teaching assistant. Teachers stay with students for at least two years. At the beginning of each school day, each teacher meets with an advisory group of 12-15 students for 30-60 minutes to discuss current issues and guide and develop individualized learning plans for each student. For the balance of the day, students are engaged in a mix of individualized computer-based study, course seminars, and project-based learning activities. The project-based activities involve teams of students in the study of their community and workplaces. Career exploration and development is an important part of the learning experience for every student and builds in intensity over the four-year program. Students enrolled at the SLCA come from both the city and county of St. Louis. One-half of the students are black, and 60% of the students come from families eligible for free and reduced lunches.

Both of these schools were significantly influenced by NDCHS in their design and operation. This project provides the first opportunity to develop and present detailed evidence on learning impact of NDCHS through the experiences and accomplishments of these two schools.

Major Activities

The method of study included the following seven activities: (1) identifying key questions regarding impact of school design features from perspectives of school representatives and project (This strategy for developing the guiding questions for the study was in keeping with the intent and perspective of the overall project of which this project was a part.), (2) taking inventory of available information at each school site (student profile, description of learning experience, performance results), (3) selecting any new information to be gathered and processing for gathering, (4) collecting and assuring quality of data, (5) developing data files for each site, (6) analyzing data, and (7) reporting data in response to guiding questions. The work entailed three direct contacts with the schools as follows: (1) workshop to identify key questions regarding impact of school design features, information needs to respond to questions, inventory available information, and any new information to be gathered; (2) review of data files for quality and completeness; and (3) reporting of data analysis to site representatives and assistance on interpretation and use in school and NDCHS design process improvement.

Guiding Questions

The first phase of the project was a workshop at each project site to identify critical questions to guide the assessment of impact on learning, review existing information in the context of the guiding questions, determine what additional information was needed, and develop a plan to gather the existing and new information. At the SES, this workshop was held with about 15 individuals including staff (e.g., teachers, administration), current students, community representatives (e.g., partners, school board), and the educational planner/architect for the school. At SLCA, the workshop included meetings with teachers, administrators, and current students as separate groups. The format for the workshops entailed a review of the purpose of the project, discussion of the questions that should be asked to assess the impact of the school on learning, and the evidence that would be needed to answer the questions. Following each of the workshops, the results were synthesized and organized; for SES, this was done by the project director, school principal, and school architect and for SLCA, by the project director, school principal, and a teacher.

The guiding questions for assessing impact on learning and directing continuous improvement and acceptable evidence to be sought to answer the questions were very similar for each school. They were therefore combined into one protocol as follows:

1. What development process was used to put the design features into practice at SES/SLCA?

   Acceptable Evidence

   - Description of development process by staff
   - Exhibits relating to process

2. What are the design features for the learning experience at SES/SLCA?

   Acceptable Evidence

   - Description drawn from planning reports, interview of key informants
   - Description drawn from staff, exhibits, videotapes, pictures, vignettes, stories

3. What features are most salient in describing the learning experience at SES/SLCA?

   Acceptable Evidence

   - Teacher and student descriptions
   - Exhibits, products, videotapes, pictures, vignettes, stories

4. What is the learning experience like at SES/SLCA from a student perspective?

   Acceptable Evidence

   - Themes in student descriptions
   - Videotapes, pictures

5. What is the learning experience like at SES/SLCA from a teacher perspective?

   Acceptable Evidence

   - Themes in teacher descriptions
   - Videotapes, pictures

6. What are the characteristics of students at SES/SLCA?

   Acceptable Evidence

   - Grade levels
   - Gender

- Socioeconomic status
- Ability level
- Special learning needs
- Reason for applying
- Reason for staying
- Reason for leaving

7. What is the impact of SES/SLCA on student performance while in school?

Acceptable Evidence

- Motivation – attendance, discipline case, retention
- Academic aptitude – ACT/AP scores
- Knowledge production – rubrics, products, services, testimonials
- Commitment to values – mission, vision, values

8. What is the impact of SES/SLCA on student performance after leaving school?

Acceptable Evidence

- Postsecondary education – participation rate, plans vs. actual, type of institution, location, performance (i.e., grades, involvement), ease of transition, leadership, retention to completion
- Employment – participation rate, plans vs. actual, type of work, location, performance, ease of transition, leadership
- Community involvement – leadership activities, community service

9. How has SES/SLCA been received by others?

Acceptable Evidence

- List of visitors and locations
- Visitor feedback
- News coverage (newspapers, television)
- Journal articles about school
- Recognition, awards
- Influence on other schools
- Invited presentations about school

These questions form the organization for the rest of this report. In each case, the evidence is first presented for SES and then for SLCA.

DEVELOPMENTAL PROCESS

Guiding Question
What development process was used to put the design features into practice at SES/SLCA?

School of Environmental Studies

In 1992, the Rosemount/Apple Valley/Eagan School District began to explore optional high schools to provide space for the upcoming population increase and to provide a choice for 11th and 12th grade students in the district. A cross section of 68 district stakeholders (e.g., parents, students, staff, community members) were asked a number of questions to gain insights about optional schools. Responses were compiled for the benefit of the school board to see if optional schools were a good fit for the district. The following survey results were presented for board discussion and action (High School Options, 1993).

The school board should consider developing the following optional high schools:

- School of Environmental Studies
- School of Health Sciences and Human Services
- School of Technology, Engineering, and Communications
- School of Humanities
- School of Business

All five of the optional high schools should share the following characteristics:

- Student enrollment and teacher assignment should be voluntary.
- A full-day, highly focused curricular program should be offered to juniors and seniors at each site.
- The schools should be inclusive with the program appropriate for the full range of ability.
- The schools should be relatively small with a target enrollment of approximately 400 students.

- Each of the schools should emphasize building collaborative relationships with other institutions, public or private, in the development and delivery of the educational program.
- All students graduating from these optional high schools should be held to the same graduation requirements as students at the district's comprehensive high schools.

Before the school board selected the SES as the first optional high school to be put in place, a three-phase plan was completed. The school board needed an operational sense of what this school would be like. Initially, the planning group for SES was called the Zoo Environmental Learning Center (ZELC) Committee. During Phase 1 (April 1992), the ZELC planning group initiated a series of focus group interviews to gather information on key SES issues. A number of focus groups were held with participants that represented parents, administrators, teachers, students, district and zoo board members, and zoo staff. The major goal of conducting the focus group interviews was to obtain information and opinions regarding an optional high school that would focus on environmental issues. The planning group established five objectives that were informed by the focus group interview results:

1. Assess the need for a high school that focuses on environmental issues (e.g., level of community support).
2. Determine the scope of the programming (e.g., new structures, interdisciplinary curriculum).
3. Obtain opinions about the proposed location (e.g., governance, funding).
4. Identify issues and concerns regarding this opportunity (e.g., selection of students, operational issues, limitations of specialized focus).
5. Obtain opinions about the program name and type of student (e.g., Environmental Studies).

During Phase 2, focus group results were shared with the school board, and the planning group had the opportunity to develop a thematic-based optional high school that would have a population of 400 students and would be operated in collaboration with the Minnesota Zoo. The planning group was charged with two functions by the school board:

1. To articulate the concept including the educational program, the instructional plan, the facility, and the governance

2. To determine the feasibility/marketability of the concept including its attractiveness and breadth of program

A number of assumptions provided a framework for the planning committee as it went about its work. The fundamentals of that framework are listed below:

- Satellite school (for Minnesota State High School League purposes)
- 400 students
- Grades 11 + 12
- Results-based
- Interdisciplinary
- Full-time students
- Focused curriculum
- Intimate/personal environment
- Inclusive
- Alternate governance plan
- Responsive to clients
- Voluntary for students and staff
- Same per pupil budget
- Band, athletics, co-curriculars at home high school
- Open 1996-1997, pilot 1995-1996

During Phase 2, the planning group had the opportunity to visit a number of sites to learn about some of the components that they were planning to use at SES in more detail. Site visits include the following:

- Alternative School - ISD 196, MN
- MN Center for Arts Education - Golden Valley, MN
- University Heights Alternative School - Bronx, NY
- Urban Academy - Manhattan, NY
- High School for Environmental Studies - Manhattan, NY
- Eastern High School - Louisville, KY
- Fairdale High Magnet Career Academy - Louisville, KY

The planning group also had the opportunity to work with a number of consultants on this project. The group deemed it important to have a common literature frame, and so they read and discussed the following books and articles:

- *Horace's School* (1992) by Theodore Sizer
- *Writer's Inc.: A Guide to Writing, Thinking, and Learning* (1990) by Sebranek, Meyer, and Kemper
- *The 7 Habits of Highly Effective People: Powerful Lessons in Personal Change* (1989) by Covey
- *Rules for Radicals* (1979) by Alinsky
- *The Structure of Scientific Revolutions* (1970) by Kuhn
- *Paradigms Lost: Tackling the Unanswered Mysteries of Modern Science* (1990) by Casti
- *Interdisciplinary Curriculum Design and Implementation* (1989) by Jacobs
- *Earth in the Balance: Ecology and the Human Spirit* (1993) by Gore
- Numerous articles from professional journals

After the planning group had the opportunity to read, work with consultants, visit a number of sites, and digest everything being discussed, the curriculum design, instructional strategies, and assessment strategies began to take form. Next, the group held a "Share the Vision" meeting with a mix of 36 participants in order to carry out the following:

1. Share collected information.
2. Share intended direction.
3. Conduct a reality check with various publics.

From the discussions held at "Share the Vision," the group was able to move on to the third and final phase. There were three major focal points to work on in the third phase of planning:

1. Staff development
2. Alternative education
3. Program planning

Phase 3, starting in May 1993, was the final, important phase for the planning group because now its efforts were coming to fruition. The group assigned three tasks to complete its work:

1. To articulate a staff development plan
2. To articulate a 12-week interdisciplinary theme study
3. To articulate a two-year program of study

The SES was the first optional high school chosen by the school district for development. The school was chosen because it was the most developed of all the optional high schools, and it had a strong partner in the Minnesota Zoo. SES was founded on two fundamental philosophical beliefs:

1. The Minnesota Zoo, by virtue of its mission, facility, and staff, serves as an ideal site for an environmental studies high school.
2. Environmental education is an ideal interdisciplinary process for developing citizenry that is knowledgeable about the total environment and capable of facing the environmental challenges of tomorrow.

After school board approval, architect and educational planner Bruce Jilk worked with the planning staff to determine a design scheme that would meet the curricular and programming needs of the SES students. Jilk was also working on research for the NDCHS, and he applied this research to the SES design. After the design of the building was complete, construction began in October 1994 and was completed in July 1995.

The high school principal was hired in September 1994, and gradually, a core staff was hired to operationalize the concept of the SES. Many of the core teachers were working in full-time positions in the home high schools and middle schools and would plan evenings and weekends for SES. A number of tasks were presented to the group:

- Establishing the vision, mission, and beliefs of the school
- Developing an application procedure and process
- Developing a registration guide and a full slate of classes
- Running parent focus groups
- Recruiting students
- Establishing a modified block schedule
- Creating an interdisciplinary model for SES
- Hiring additional staff
- Writing a student handbook
- Setting operational standards for SES
- Keeping the public informed via newspaper, television, and radio
- Maintaining the goal to open in 1995-1996
- Revisiting vision, mission, and beliefs on a yearly basis

St. Louis Career Academy

The development process for the SLCA traces its roots back to 1972 (Hutchins, 1999) when Minnie Liddell and a group of parents brought suit against the State of Missouri and the St. Louis School District for operating segregated schools. The suit was not settled until March of 1999. Vocational education became a component of the lawsuit in 1980 as a result of a decision by the State of Missouri in the 1960's to create two vocational systems for the St. Louis metropolitan area. One system was restricted to the city and attended mainly by blacks, and the other for the county was attended primarily by whites. According to Hutchins (1999), "The United States District Court, Eastern District of Missouri, found that the State had established two separate school districts to create a dual system of vocational education; it found that the State of Missouri had violated the state constitution when it allowed this arrangement to continue" (p. 2) (see Beacham, 1998 for a complete record of the court proceedings relating to the SLCA). Subsequently over the next ten years, four different strategies were tried to settle the legal case—all failed. As a result, plans were made by the courts to establish a new, independent school district to serve students in both the city and county of St. Louis. Paul Hales, an attorney, was appointed by the courts as Planning Coordinator for the new district. John McDonald, the Chairman of the Board for McDonnell Douglas, was selected as the President of a planning board. The plans were approved by the courts and in June 1996, the courts established the St. Louis Career Education District (CED). A part of the plan was to open a new vocational high school, called the St. Louis Career Academy in temporary quarters at the site of the Southwest High School which had been closed two years before. The courts also created a special agency, the Vocational Education Oversight Office, to oversee the work of the CED; Dr. Larry Hutchins was named as the Education Director for the office.

Opposition to the plans of the CED from the Special School District of St. Louis County that had previously been responsible for vocational education in both the city and county began to take form soon after its beginning. This opposition resulted in delays for approval of funding for the new SLCA, until July 1996—six weeks before the Academy was to open. At that point, the remodeling of Southwest High School had not been done; and teachers, equipment, and supplies had not been acquired. Nevertheless, the SLCA opened in September 1996 with 240 students. The legal battles of the CED continued (Hutchins, 1999) until March 1999 when the CED was terminated and the SLCA was transferred to the St. Louis Public Schools as part of a larger transaction involving the Missouri legislature and settlement of the Liddell case. So, between the time this impact

project was initiated and completed, some major changes and turmoil occurred for the SLCA.

As noted above, the courts provided for a planning process and planning board for the CED, one of the results being the plans for the SLCA. The process occurred between July 1995 and June 1996. The plan for the new district (CED) included attention to governance and administration; educational goals, curriculum, instruction and assessment; facilities and technology; and finance and budget (Hutchins, 1999). In describing the first year of planning, Hutchins (1999) organizes the activities into the six following design areas: (1) planning board, (2) staff, (3) studies of external models of vocational education, (4) commissioning of public opinion polls and focus groups, (5) organization and participation of stakeholders, and (6) meetings with the Missouri Department of Elementary and Secondary Education. These areas will be summarized below.

The board for the CED was initially appointed as a planning board with seven members including John McDonnell noted earlier. Other members included the following:

- Zella Harrington, Executive Director of Hope House in St. Louis (Vice President)
- Martha L. Perine, Vice President, Federal Reserve Bank of St. Louis
- Ronald L. Jackson, Executive Director, Project Interact, St. Louis
- Deborah Silverberg, President, AnchorMann Enterprises, St. Louis
- Leonard Toenjes, Director of Apprenticeship and Training Construction Training School, St. Louis
- Gary K. Wright, PhD, Executive Director, Cooperating School Districts, St. Louis County

The major conclusions reached by the board during the planning process which had major impact on plans for the SLCA were as follows (Hutchins, 1999):

- The decision of students as to a specific area of occupational training should be left open as long as possible.
- Students should be prepared as broadly as possible while, at the same time, specific skills are mastered.
- Students should be prepared to get a job and go on to postsecondary education (e.g., technical college, community college, union apprenticeship, university).

The staff of the planning board consisted of a Planning Coordinator (Paul R. Hales, a St. Louis attorney with previous involvement in the vocational education situation in St. Louis), an Education Director (Dr. C. L. "Larry" Hutchins, with a background in educational research and development from Denver, Colorado), an administrative assistant with a background in journalism, and a secretary.

The consultation made during the planning process was extensive. The major groups involved were as follows (Hutchins, 1999):

- School superintendents and staff of the city and county school districts as well as parochial schools
- Staff and administrators from the Special School District
- Presidents and/or key individuals from postsecondary institutions
- Representatives from the St. Louis foundations
- Representatives of community organizations
- Individuals responsible for vocational or career education
- Employers
- State education authorities
- Vocational Education Oversight Office (headed by Dr. Ralph Beacham)

The public opinion studies conducted during the planning process focused on what the community's interests were in vocational education. Those surveyed included high school counselors, parents, teachers, students, and members of the business community. A major finding was that the SLCA would have to overcome the low status perception held of vocational education by the St. Louis area residents (Research and Planning Group, 1995). The study spent considerable time on determining the best location of the STCA, one that would be attractive to both white and black students. The primary location selected was what is called the "central corridor" in the city—it contained the baseball stadium, the football stadium, the St. Louis Arch, the Zoo, the Botanical Gardens, the Humane Society, the Science Center, and the performing arts area called the Grand Center (Hutchins, 1999).

The study of external models in the planning process focused on *New Designs for the Comprehensive High School* (Copa & Pease, 1992), a product of the NCRVE headquartered at the University of California, Berkeley (Hutchins, 1999). It was particularly attractive to the planning board and staff because of its equal attention to both vocational and academic education. The staff visited some of the sites where the NDCHS features were being implemented including the SES in Apple Valley, Minnesota and the

Chaska High School in Chaska, Minnesota. A third visit was to the Cambridge Latin and Ringe School of Technical Arts located in Cambridge, Massachusetts that had also been an influence on NDCHS.

Significant involvement of the stakeholders in the CED during the planning process was called for by the courts. The stakeholders involved included the following:

- All parties to the Liddell case
- All school districts in St. Louis City and County
- Executive Departments of the State of Missouri
- St. Louis City and County Government
- St. Louis City and County Job Training Partnership Act programs
- St. Louis Community College and University of Missouri, St. Louis
- St. Louis School-to-Work, Inc.
- St. Louis Regional Educational Partnership
- Private four-year colleges serving the city and county
- Employers in the St. Louis region
- Community-based organizations in St. Louis City and County
- Special population advocacy and training groups
- Teachers
- Students
- Parents (Hutchins, 1999)

Some 300 people were invited to join in the process, and about 150 responded to form one large task force. Three all-day meetings were held with the task force which was divided into six subgroups. The process used with the task force was to give members briefing papers in advance of the meetings with alternatives and recommendations; the meetings were then used for discussion and decisionmaking. For example, at the first meeting, the task force was presented with the following perspective on which to decide if they were supportive:

- The educational program of the district should be designed to keep students' options open.
- The CED should not prematurely direct students to a particular career.
- The educational program should assist students in understanding their own strengths and competencies and help them in identifying the many ways they can

extend the range and depth of those competencies across the many different kinds of intelligence it takes to succeed.

- The work contexts of the CED's curriculum should be aligned and regularly updated with the needs of employers and the needs of students.
- The district should maintain an enrollment policy that admits students based on interests and motivation rather than prior academic record or location.
- The district should not duplicate the services and facilities that other organizations can provide more cost-effectively; it should complement and not compete with other programs unless the demand for a particular program cannot be met by other institutions.
- The district should assume a catalytic role in creating collaboration among all educational institutions to eliminate duplication of effort in the field of school-to-work preparation and to expand the access all students have to vocational education, career education, tech-prep education, apprenticeships, and all other means of enhancing school-to-work transitions.
- The district should use technology to improve the productivity of the staff and students as well as the communications and access that all districts and students have to school-to-work opportunities. (Hutchins, 1999)

The student goals that the task force was asked to support in the area of curriculum were:

- Students will master the skills and knowledge needed for success in postsecondary schools and/or advanced job training.
- Students will be knowledgeable about one or more careers that interest them; they should have a plan for taking the postsecondary steps necessary to be successful in their chosen careers.
- Students will possess entry-level job qualifications most specified by employers.
- Students will understand, value, and contribute to their community. (Hutchins, 1999)

After much discussion and voting (most of the recommendations were endorsed by a ratio of 80 to 20 percent) on these and other issues, the task force held a public hearing on their recommendations in October 1995. Later, major opposition to the recommendations came from the county superintendents who felt they had not had enough influence in the task force process; their opposition was mounted through a court hearing which approved the creation of CED (Hutchins, 1999).

The other major influence in the planning process was the interaction with the staff of the Missouri Department of Education. According to Hutchins (1999), the following three constraints were faced by the CED regarding policy and procedures: (1) rules and regulations of the State Board of Education, (2) federal laws (e.g., Perkins), and (3) rules relating to free and reduced lunch. Some of the issues discussed with the Missouri Department of Education were teacher and administrator certification, course/program approval, Area Vocational Technical School designation, Missouri School Improvement Program/accreditation, transportation, and food service.

Hutchins (1999) did point out that the "career academies" movement was *not* a major influence on developing the SLCA, although the SLCA shared many of the beliefs and assumptions of career academies. Major differences were that SLCA was designed as a complete school, with is own athletics and extracurricular activities and all faculty focused on merging academic and vocational education. It was not designed as a school-within-a-school.

DESIGN FEATURES

Guiding Questions

What are the design features for the learning experience at SES/SLCA?

What features are most salient in describing the learning experience at SES/SLCA?

What is the learning experience like at SES/SLCA from a student perspective?

What is the learning experience like at SES/SLCA from a teacher perspective?

What are the characteristics of students at SES/SLCA?

School of Environmental Studies

Design Features

The section on design specifications describes the features of SES in terms of the design elements of NDCHS.

Learning Context

The learning context addresses the assets, problems, opportunities, and aspirations of SES. They form a set of design criteria or goals for the school:

- Provides a coherent framework for curriculum and instruction
- Provides a strong academic background integrating discipline-based and interdisciplinary studies
- Partners with multiple organizations to extend authentic learning experiences into a variety of real-world experiences
- Enhances educational opportunities that are shaped by the needs and interests of the students
- Encourages intellectual and emotional risk-taking
- Models thoughtful, informed decisionmaking
- Provides an intimate and personalized learning environment that enhances learning
- Encourages sustainable environmental actions
- Establishes an optional 11th and 12th grade high school that is voluntary for 400 students and 20 staff

- Includes all student ability groups
- Creates individual and group learning opportunities
- Provides a model based upon best practices for others to replicate

Learning Signature

The learning signature addresses the features of SES that give it uniqueness and a special spirit. These include the following:

- The "living wall" draws special attention to the environmental theme of SES.
- Plants, aquariums, terrariums, pictures, drawings, and paintings throughout the school enhance the environmental theme.
- Open and flexible spaces throughout the school indicate that learning occurs "outside of the box."
- Student work stations, pods, and houses represent the need for a personalized learning environment.
- Displaying student projects reflects the value of authentic learning and that student work is vital and relevant.
- Integrating the school with the outside environment lends itself to being part of and enjoying the natural beauty of the environment.

Learning Results

Learning results communicate what students are expected to learn at SES:

- Understand leadership qualities, and take on the role of a leader.
- Be self-perpetuating learners.
- Connect to the local and global community.
- Be environmentally informed.
- Work effectively in groups and independently.
- Accept the responsibility that goes with freedom.
- Use personal experiences to add meaning to learning.
- Navigate and identify valuable resources.
- Create work products that are meaningful and reflective of the real world.
- Have the necessary skills for success in the 21st century.
- Experience success on local, state, and national educational standards.

Learning Process

The features of the learning process describe the curriculum, instruction, and assessment activities of SES.

- Includes an interdisciplinary thematic framework that makes the necessary connections for students to learn real-world problems and issues
- Allows for discipline-only instruction where necessary
- Sets high expectations and standards of quality
- Creates an atmosphere where personalization rises to the top
- Establishes communities that value collaboration, flexibility, and respect
- Encourages a balance of teamed and independent learning opportunities
- Develops assessments that are authentic and/or performance-based in nature
- Values student input and allows students the opportunity to go along different pathways in seeking a solution to a question or problem
- Exemplifies student work products that reflect the world of work and are valued by the community
- Includes a set of foundation skills needed for all students to be successful in high school and as the students continue to learn throughout life
- Includes a systematic approach for students to meet local, state, and national educational standards
- Takes place worldwide

Learning Organization

Learning organization describes how SES organizes students, time, settings, learning processes, staff, and decisionmaking to accomplish its mission.

Organization of Students

- Grades 11 and 12
- Inclusive of all student populations
- Randomly assigned to an individual work station and a pod
- Remain in an interdisciplinary thematic house for one half of the day with the same students and staff
- Learning occurs in balanced team and independent environment
- Authentic knowledge products which are shared with outside community experts
- Can take a class at the home high school if it is not offered at SES (usually music)

Organization of Time

- There is a hybrid mixture of a 4 x 4 block which includes components of a straight block (theme) and an AB block (electives).
- An opportunity exists for an every-other-day inquiry and discovery block where students select an independent project.
- At the end of each trimester, a short period of time exists for intensive theme electives which include field experiences to other locations.
- Interdisciplinary thematic learning experiences vary in length each day.
- Off-site learning experiences can occur with the extended blocks of time.
- Learning projects tend to be longer term in nature.
- Advanced placement (AP) opportunities exist within the thematic curriculum and outside of the thematic curriculum.

Organization of Learning Settings

- A flexible and open environment allows for a variety of learning experiences.
- Individual student work stations and pods create a personalized and intimate environment that lends itself to individual work and teamwork.
- House structure provides a unique and valuable space for interdisciplinary thematic instruction.
- Forum is the hub of the SES community.
- External environment is brought into SES through several glassed areas.
- Immediate surrounding area is an opportunity to extend learning out into the field (i.e., ponds, forests, lakes).
- Surrounding communities are valuable for students to connect with local experts and give back to the communities via student work products.
- Other learning locations in different parts of the world are visited either in person or via the Internet by SES students.

Organization of the Learning Process

- Supports a heterogeneous grouping of students
- Incorporates interdisciplinary thematic instruction for one half of the school day
- Includes discipline-only electives for the other half of the day that connect to the thematic curriculum when possible
- Supports individual work and teamwork

- Uses assessments that are authentic and/or performance-based
- Allows for students' work products that are demonstrated to community experts and are valued by the community
- Expects a set of foundation skills to be used by each and every student
- Encourages students and staff to "think outside of the box"

Organization of Staff

- Allows staff the opportunity to risk failure
- Accepting of staff consensus on issues for improvement and day-to-day operations
- Depends upon each staff member to take a leadership role in an area of his or her own expertise and to mentor other staff
- Uses a peer review process to identify growth opportunities for staff

Organization of Decisionmaking

- Must place the highest priority on student interests and needs
- Decisions made in alignment with the vision, mission, and beliefs of SES
- Are supported by current research and best practices
- Occurs in an open dialogue with consensus needed to move forward
- Values the input of the stakeholders (e.g., students, parents, staff, community members)

Learning Partnerships

Learning partnerships address the strategic alliances that SES has put in place to achieve its mission and beliefs.

- The Minnesota Zoo is a critical partner not only for the generosity of donating the site for the school, but also for connecting staff and resources to SES.
- The City of Apple Valley is a vital partner for the bonds it generated to build the school, and the school is located in its jurisdiction.
- The other communities that make up the school district are of great importance as SES students create work products in these communities.
- Local business, industry, governmental agencies, and universities provide resources and a valuable network for SES.

- Site Councils that include parents, students, and staff play a key role in shaping the SES community.
- An SES Foundation is forming, which will provide additional resources for the school.
- The partnerships formed with other schools and institutions around the nation and the world extend the learning opportunities of SES students.
- The day-to-day partnerships that exist between staff and students and students and students create a collaborative and dynamic learning environment.

Learning Staff and Staff Development

The features of SES's staff and staff development activities are as follows:

- The focus is placed on what is best for students and learning.
- Staff members identify best practices and current research that will improve student learning.
- A dialogue occurs in which lead staff members can bring other staff "up to speed" in a particular area.
- Continuous improvement leads to a growing and dynamic community of staff and spreads to students.
- The peer review supervision and evaluation system allows individual staff members to identify and plan areas of individual growth.
- Workshops, site visits, college courses, professional reading, researching, teaching, and presenting to others are ways in which the staff grows personally and professionally.
- Staff ownership of the school and the vision, mission, and beliefs of SES lead to a great sense of commitment.
- Recognizing student and parent input and incorporating their ideas into the school has been important to the school.
- Like the building, SES staff has been open and flexible and has thought "outside of the box."

Learning Environment

The following are features of learning technology and facilities at SES:

- A personalized and intimate environment has demonstrated care and compassion towards students and staff.
- Openness and flexibility have allowed for a variety of learning experiences.
- Adaptability of the learning spaces have allowed for unique learning experiences.
- Individual work stations and pods create individual and teamed learning spaces and opportunities.
- The house concept includes all student abilities with a variety of learning experiences and assessments, which lead to a unique student work product that is shared with an outside audience.
- A sense of identity and community have been formed through a unique building design.
- The size (400 students) of the school allows students and staff to get to know each other and work together on a rigorous curriculum with high standards and expectations.
- The outside environment is easily seen and "taken in" throughout the building and provides an important context for the building.
- Spaces for student work display exist throughout the building and send a message that students' work products are important and should be on display for others to view.
- The climate and culture of SES has developed in a positive fashion when a carefully chosen design allows for freedom and responsibility to occur naturally.

Learning Finance

Learning finance as a design element of NDCHS addresses funding of SES:

- SES was allotted the same square footage per student as the other 2,000-student high schools in the district.
- SES had the same construction costs per square foot as the other 2,000-student high schools in the district.
- SES has the same staffing ratio as the other 2,000-student high schools in the district.

- SES has the same instructional budget allocation per student as the other 2,000-student high schools in the district.
- SES has the same capital budget ratio as the other 2,000-student high schools in the district.
- SES seeks external grant opportunities and gifts as a way to enhance the available resources for improving educational opportunities for students.
- SES relies on human and financial resources from various partners to enhance the SES curriculum.

Learning Celebration

Learning celebration focuses on how SES recognizes learning and the accomplishment of its mission, vision, and beliefs.

- Learning is celebrated on a day-to-day basis by students and staff by having a unique and innovative learning environment.
- Student assemblies are used to celebrate a variety of activities or events happening in the school.
- School socials have allowed students and parents the opportunity to celebrate the sense of community that occurs at SES.
- Newspaper and television reports recognize the achievements of SES students and staff.
- National articles detail and share the successes of SES.
- Being recognized by others (e.g., U.S. Department of Education, AAIE, NASSP) has created a sense of worth by staff and students.
- General visitor interest in SES and the replication that occurs leads to a satisfaction that SES has a great influence around the country and the world.

Salient Features

This section focuses on the most significant features of SES as judged by the school's principal.

Interdisciplinary Thematic Instruction

SES students spend the majority of their school day during the 11th and 12th grade years in an interdisciplinary thematic class entitled *Environmental Studies.*

Project-Based Learning

Students at the SES have been exposed to a number of authentic projects. Typically the work the students do is connected, meaningful, and related to the real world; it is also presented to a number of experts in the field. The feedback from students has been very positive because they see the value of the project when they can incorporate their own experiences and skills. They tend to remember their learning experience as compared to a more traditional approach of filling in the blank or turning in a worksheet that seems distant and meaningless. See Appendix II for the content of the student reference guide for the development of foundational skills to support extensive use of project-based learning.

School Climate

The school climate at SES is different for a variety of reasons because of the unique attributes of the school. Through a written survey of all SES students present on a school day in January 1998 (310 students) (Bodette, 1998), SES students have identified the features shown in Table 1 as contributing to a positive school climate at SES. The question to students was, "Please list and prioritize three major components at the School of Environmental Studies that makes it a successful place for you to learn as a student."

Table 1
Features of SES Contributing to
a Positive School Climate as Judged by Students

Features	*Frequency (N=310)*	*Percentage*
Freedom	81	26.1
The staff	80	25.8
School atmosphere	59	19.0
The people	36	11.6
Staff/student relationships	36	11.6
Independence	30	9.7
Trust	15	4.8
Sense of community	14	4.5
Responsibility	11	3.5
Fun	9	2.9
Individualism	7	2.3
Expectations	7	2.3
Respect	5	1.6
Support	4	1.3
Opportunities	4	1.3
Attitudes	4	1.3

Students' Perspectives of Learning Experience

Students were asked via the survey noted above (Bodette, 1998) how they would describe the learning experience at SES. The summary statements resulting from the survey included the following:

- Evidently some student learning needs were not being met in a traditional setting. This became apparent from the survey results. Current students at SES responded strongly that a school like SES is needed as an alternative to a traditional setting because not all students are well-served in their home high schools.
- Students feel strongly that they have benefited from their involvement in the school; they look at the school as a wonderful community resource, and they find the school an exciting place. They also believe a number of students are interested in the school with many more applying for the school than there is room for. A high

percentage of students say that if they had to do it all over again, they would still attend SES.

- Students find the interdisciplinary framework exciting and appropriate. They disagree that classes should be organized and taught around traditional disciplines. They believe the range of programs is sufficient, and they appear somewhat excited and challenged by the curriculum.
- SES students speak strongly about the positive school climate that exists within the building. They also say in a strong fashion that there are high standards set for achievement and student behavior. The strong working relationships that occur with other students and adults are also noted.
- The goals of the school appear to be clear to the students. They feel students coming to SES will have the necessary skills and attitudes to be successful. Students feel they will be well-prepared for college, but a number of the students feel the school should have a highly science-orientated, college preparatory curriculum. It is interesting to note, out of the 30 questions asked of SES students, there was not a single question to which the student body responded in a neutral or negative way regarding SES and its programming.

A survey of the entire school district in Fall 1997, including SES, by the Search Institute (Bodette, 1998) was valuable because the results could be used to compare percentages of SES 11th and 12th grade students with the entire school district population of 11th and 12th grade students. The survey results for selected areas of student perceptions are shown in Table 2. SES students in the 11th and 12th grade were more motivated to do well in school, were more actively engaged in learning, did more school work; and by a great margin, SES students cared more about their school. SES students placed a higher value on helping other people and believed in standing up for their convictions more than other district high school students.

Students attending SES had greater empathy, sensitivity, and friendship skills. They were more likely to resolve conflict nonviolently. SES students had more control over "things that happen to me" and were given more useful roles in the community. SES students felt safer at home, school, and in their neighborhoods.

Table 2

Student Perceptions of School Climate,

School of Environmental Studies and District-Wide

Area of Concern	*Items*	*% of SES Students Agreeing*	*% of District Students Agreeing*
Commitment to Learning	Young person is motivated to do well in school.	74	70
	Young person is actively engaged in learning.	78	65
	Young person reports doing at least one hour of homework every school day.	71	56
	Young person cares about his or her school.	95	62
Social Competence	Young person knows how to plan ahead and make choices.	32	31
	Young person has empathy, sensitivity, and friendship skills.	54	48
	Young person seeks to resolve conflicts nonviolently.	58	47
Positive Identity	Young person feels he or she has control over "things that happen to me."	59	51
	Young person reports having high self-esteem.	56	51
	Young person reports that "my life has a purpose."	60	58
	Young person is optimistic about his or her personal future.	76	73
Empowerment	Young people are given useful roles in the community.	36	26
	Young person serves in the community one hour or more per week.	44	43
	Young person feels safe at home, school, and in the neighborhood.	68	57
Boundaries and Expectations	Both parents and teachers encourage the young person to do well.	61	45
Support	School provides a caring, encouraging environment.	54	28

Finally, SES students believe their teachers and parents encourage them to do well at a higher rate than students from the other high schools. By almost twice the rate, SES students say their school provides a caring, encouraging environment.

Focusing on the specific questions asked by the Search Institute Survey, SES students placed a higher value on a number of items. SES students believe their teachers really care about them, and they get a lot of encouragement at school. They also believe that other students care about them, and that they have the opportunity to help decide what goes on at the school.

SES students believe their teachers push them to be the best that they can be, and the students say they try harder at school to do the best work they can. The students from SES say they care more about how they do in school, and they feel less bored in their school. They spend more time on homework and care significantly more about their school. SES students felt stronger about making the world a better place to live, and they had the opportunity to be a leader during the last 12 months in a group or organization. A significant find from the survey is that SES 11th and 12th grade students and district 11th and 12th grade students had identical grade point averages of 3.10, on a 4-point scale. This is significant for the fact that SES students are identical in terms of grades to the district population. The SES students are no better, no worse, academically (grade point averages), than their district counterparts.

Teachers' Perspectives of Learning Experience

Eight teachers (seven interdisciplinary/thematic teachers and one elective teacher) at the SES (Bodette, 1998) were asked to focus on the benefits of interdisciplinary/thematic instruction. The themes apparent in their responses included the following:

- Students are able to reflect the real world.
- Learning is practical and realistic.
- Connections are being made.
- The curriculum is more coherent.
- Students can apply what they learn.
- Knowledge is transferred.
- Teaming occurs.
- Everyone can experience growth.
- Lifelong learning is encouraged.

- Learning is validated.
- A sense of community is formed.
- Students question more effectively.
- Collaboration on curriculum development occurs.

Characteristics of Students

Each year, all of the sophomore students in Independent School District 196 have the opportunity to apply to the SES. On the application, students are asked to fill out information such as their name, student ID number, parents names, home high school, grade level, and phone number. Along with this, students are asked to answer three questions in one hundred words or less. Question one asks the students why they would like to attend SES. Question two seeks information about what the student expects to receive from SES. Finally, in question three, students are asked to describe how they learn. This is the only information solicited from the students. The application does not ask for grade point averages, test scores, or teacher recommendations. Three SES reviewers read the applications and give them a score based on criteria the school has developed. The top one hundred junior students are accepted by an application score. The second one hundred junior students are chosen from the remaining applications by lottery. Students not chosen are placed on a waiting list to attend SES.

Some of the key characteristics of students at SES are as follows:

- **Grade Levels** – 11th and 12th grade
- **Gender** – 61% female and 39% male
- **District Demographics** –
  - Mostly suburban school district located 15 miles south of the Minneapolis-St. Paul area
  - Fourth largest school district in Minnesota, with more than 27,000 students in grades K-12
  - District population of 120,000
  - More than 50% of district households have preschool and/or school-aged children.
  - Approximately one-third of all district residents are under the age of 18.

- **Ability Level** – SES reflects the other district high schools in ability level; average grade point level at SES is identical to the other district high schools as a whole.

- **Special Learning Needs** – 5.5% to 7% (depending on the year) have been identified with special learning needs at SES as compared to 8% at the other district high schools.

- **Reasons for Coming** – From analysis of the student application to SES (Bodette, 1998), students who were new students as juniors in 1998 shared their thoughts about what SES would be for them as a student. Most of their comments were related to interdisciplinary/thematic instruction and the climate at SES.

  At the top of the frequency tables were themes related to an interest in studying about, or interest in the environment. Next came interest in doing hands-on work and experiencing the SES learning environment. Students talked repeatedly about the SES curriculum and courses and the preparation for a future career or college.

  The middle section of frequency counts was related to the school climate at SES. Students talked highly of the school atmosphere and the challenge they were expecting. The size of SES (400 students) was appealing along with the freedom and responsibility they were given as students. The strong relationships they can make with their teachers were also positive.

  In the final section, returning to curriculum and instruction, students like the pod/house concept and looked forward to the opportunity to work in groups. Having independent learning experiences with the opportunity for real world applications was deemed important.

  From some of the selected quotes below, it is apparent that upcoming students are excited about the opportunity for learning at SES:

  > This slight competition would also help me to work harder, because right now expectations are low, so I produce only what is required.
  >
  > I would enjoy learning in a school that entrusts the students with responsibilities, then allows them to have reasonable amounts of freedom.
  >
  > I love to make connections. Everything seems more meaningful and understandable.

> The closeness between students and teachers is prominent, which I believe is one of the best qualities a school can offer.
>
> The system SES uses is exceptionally realistic, reasonable, practical, respectful, honest, trustworthy, and yet more.
>
> What appealed to me was how relaxed, yet structured the whole atmosphere seemed.
>
> They say you need to come to SES ready to learn and ready to work.
>
> I'm a solid C plus student, but I feel that I am selling myself short; I feel I can accomplish *so much* more with the hands on learning and teaching techniques your school provides.

These comments were stated by the upcoming students who have not had a single class or have not been in the building during the school day; they reflect what current SES students have to say about the school. Their comments center on the unique curricular opportunities for learning and the school climate at SES.

- **Reasons for Staying** – Current SES students were asked to list and prioritize three major components at SES which make it a successful place for an individual to learn as a student (Bodette, 1998). Students identified curriculum and school climate as two out of the three major themes. The theme of school climate tallied the highest frequency counts, with the theme of curriculum second, and school environment third.

  At the top of the list for current students was the thought of freedom followed by the positive feelings toward SES staff members. Students spoke highly of the school atmosphere and the people who make up the school. They enjoyed the relationships developed with staff members, the independence they had, along with trust, sense of community, and responsibility given.

  The curriculum by itself came to the top of the curriculum theme, and a number of students mentioned interdisciplinary/thematic instruction by name. The hands-on approach, being able to work in groups, and the different teaching/learning styles were mentioned repeatedly.

The following are what some of the students say about SES components that make it a successful place for learning:

> The atmosphere provided here is open and warm.
>
> The interdisciplinary projects—I learn and retain information better when I can get out in the field and actually experience what I'm learning.
>
> Trust and responsibility—the little thing that makes the huge difference!
>
> The relaxfulness at the school is great for the stressful lives of teenagers.

Students were also asked to share their overall learning experience at SES in a paragraph or less. Several of the responses were aimed directly at the school climate and interdisciplinary/thematic instruction experiences. The following quotes reflect what was said by other students:

> I have learned more here than at any other school! 'Nuf said.
>
> I believe I have learned things that will last a lifetime, not just till the test.
>
> Before coming here, I was almost in a state of refusing to learn. I closed off my mind to the monotonous lecture/test orientated learning, which goes in one ear and out the other.
>
> I feel more like an adult; I make my own education!
>
> SES is a place where you actually get to do something that matters.

- **Reasons for Leaving** – Students returning to their home high school (13 students) at the end of the school year were asked to respond to the following two questions (Bodette, 1998):

1. Please list the top three reasons why you are leaving SES to attend your home high school.

2. How was your overall learning experience at SES? Please write a paragraph summary.

The results are shown in Table 3 and 4.

Table 3

Reasons Given by Students for Leaving SES

Reason	*Frequency (N=13)*	*Percentage*
Other curriculum choices at home school	6	46.0
Postsecondary options program	4	30.8
Friends at home high school	4	30.8
Easier at home high school	3	23.1
Early graduation	2	15.4
SES curriculum "not their thing"	2	15.4
Moving to another district	1	7.7
Better grades at home high school	1	7.7
Harder at SES	1	7.7

Table 4

Student Characterization of Overall Learning Experience at SES

Features Noted	*Frequency (N=13)*	*Percentage*
Teaching/learning experience	7	53.8
Freedom/trust/responsibility	5	36.5
Excellence	3	23.1
Ability to learn long term	3	23.1
Real-world learning	3	23.1
Good preparation for college	2	15.4
Awesome	1	7.7
Uniqueness	1	7.7
High expectations	1	7.7
Wonderful	1	7.7
Apply what is learned	1	7.7
Meet new people	1	7.7
Group learning	1	7.7
Caring atmosphere	1	7.7

St. Louis Career Academy

Using a similar organizational format to the one used to describe the SES, the design specifications of the SLCA are presented with the three following headings: (1) overall design features, (2) most salient features from student and teacher perspective, and (3) student characteristics.

Design Features

The design features of the SLCA (Hutchins, 1999) are again organized by the design elements in the NDCHS design process.

Learning Context

- The planning board for the CED was appointed as the initial Board of Education for the CED and therefore was responsible for SLCA; starting the second year, the board was to be elected from subdistricts of CED.
- The name of the district was designated as the Career Education District to avoid the negative reputation in the St. Louis area for the term *vocational education* and to indicate new directions.
- The SLCA would be a four-year school, grades 9-12 of 400 students.
- The school would start with a 9th grade class of 200 students.
- The SCLA would be a full-day school and offer a regular high school diploma.
- The SCLA would have a goal of having 50% black and 50% white students.
- In the first year, 25% of students would be selected randomly from among those that applied and 75% would be selected on a point system allocating a 50-point-weight to academic achievement, 25-point-weight to attendance record, 25-point-weight to deportment, and 25-point-weight to admission counselors perception of student and parent understanding of school and motivation to attend; the long-term goal was to have all students selected at random; the selection criteria would be applied separately for black and nonblack applicants.
- For the first year of SLCA, the CED would have discretion to select teachers from the pool of all those who applied.
- Students at SLCA would wear uniforms to create a more business-like context, reduce competition (in dress) among students, and reduce the influence of gangs.

Learning Expectations

- Students would be prepared for entry into the job market *and* ready to continue their learning in union apprenticeships, at technical colleges, community colleges, and professional undergraduate college programs (at four-year or comprehensive universities).
- Students would meet the "Show-Me Standards" adopted by the State of Missouri. The standards fall under two categories: (1) performance standards and (2) knowledge standards. The broad categories of performance standards are as follows:
    - **Goal 1**: Knowledge and skills to gather, analyze, and apply information and ideas
    - **Goal 2**: Knowledge and skills to recognize and solve problems
    - **Goal 3**: Knowledge and skills to communicate effectively within and beyond the classroom
    - **Goal 4**: Knowledge and skills to make decisions and act as responsible members of society

The knowledge or content standards are in the areas of communication arts, mathematics, science, social studies, fine arts, and health/physical education (Missouri Department of Elementary and Secondary Education, 1999).

Learning Signature

- The SLCA would focus on "Life Sciences and Service," sometimes called "Life Sciences and Systems."
- The signature would direct attention of teaching and learning to complex, real-world systems and problems.
- In terms of vocational education, the signature meant an emphasis on health sciences and service and natural resources—an area of high expected occupational growth in the St. Louis area.

Learning Process

- Specific occupational training choices would be gradually introduced through a sequence of learning experiences focusing on Career Awareness, Career Development, and Career Pathways.

- Career Awareness was to begin in the 9th grade, not as a separate course, but embedded in applications of the academic parts of the learning process.
- As much as possible, learning was to be problem-based and driven by the importance of studying complex, real-life systems, thereby leading to the integration of the subject matter areas.
- Learning would be contextualized in the world of work and assessed by performances simulating business and industry.
- In the 10th grade, a Career Development course was introduced to assist students in exploring their interests and aptitudes in six career pathways: (1) Arts and communications, (2) business and finance, (3) health services, (4) human services, (5) manufacturing and technology, and (6) natural resources and agriculture.
- In the 11th grade, students would select one career pathway for in-depth exploration. Exploration would occur through learning specific vocational skills common to several occupations in the career pathway.
- In the 12th grade, students would continue to develop specific vocational skills in school and through actual work experience in the selected pathway as well as continue academic study; the learning could occur in a tech-prep program jointly with a technical or community college or university.

Learning Organization

- In the 9th and 10th grade, the school day would be divided into two parts: (1) one half on computer-based learning of basic mathematics, reading, communications, social studies, and science and (2) the other half in sustained problem-solving activities.
- In the 11th and 12th grades, less time would be spent in computer-based training and more in vocational school-based training. On alternate days, students would have all day for work-based learning experiences. Students would complete a Certificate of Initial Mastery (CIM) in a career pathway before advancing to work-based learning (see Appendix I for example of Certificate requirements).

Learning Partnerships

- The importance of contextualized learning and work-based learning would require a large number of partnerships with business and industry.

- Early placement of students in technical and community colleges and universities would require a number of articulation agreements with postsecondary educational systems.

Learning Staff and Staff Development

- Teachers (one from each of the subject areas of English, social studies, science, and mathematics) would be organized into interdisciplinary teams with responsibility for 120 students.
- The interdisciplinary team of teachers would follow the students for at least two years.
- The interdisciplinary teams would introduce multiple interdisciplinary, problem-based units; therefore, hiring criteria gave priority to teachers with more than one area of certification.
- Teachers would be given a higher rate of pay if they had multiple certification and work experience outside of teaching; teachers were given 11-month contracts.
- Interdisciplinary teams would have the assistance of an instructional facilitator and a special education teacher.
- Interdisciplinary teams would have their own space, including a computer lab and almost complete control over delivery of instruction (e.g., setting own schedule, use of space, curriculum approach).
- Staff would be given training and time to use learning technology (e.g., computer hardware and software), integrate curriculum (e.g., among academic areas, between academic and vocational—initially scheduled for two hours each day), teamwork, lesson planning, counseling, career development and development of work experience programs, and organizational development (e.g., mission and vision of school, developing cohesive team, advancing school design).
- Staff would include a principal and assistant principal who would teach one-half time for at least the first year.
- Staff would be evaluated by a "360 degree evaluation" in which everyone evaluates and is evaluated by others, including students and parents.

Learning Environment

- A computer-based instructional system called an "integrated learning system" would be used. The system would provide for individualized instruction in a variety

of curriculum areas and grade levels and a management system to track and report student progress.

- Part of the space in a retired high school (Southwest High School) would be renovated to temporarily accommodate the SLCA; each group of 120 newly admitted students would be assigned to a "house" where the students and teachers would be in close proximity (two houses were used for the first class of 240 students).

Learning Celebrations

(Not described.)

Learning Finance

- The first year instructional budget for the SLCA was $1,348,375 or $5,618 per pupil, excluding transportation and special education; for the third year, it was $4,478.631 or $11,196 per pupil.
- A one-time capital and planning budget of $1,531,000 was provided for remodeling a portion of an old high school building to house the SLCA and for equipment, including the lease of 250 computers and related networking, software, training support, and hardware.

Salient Features

As with SES, an attempt was made to identify, from among all of the many characteristics of SLCA, which were the most important from the perspective of students and staff.

Students' Experiences

The information on most important features from a student point of view is based on three focus group interviews with students at the SLCA conducted by the author of this report. A group interview was done with five to six students from the 9th, 10th, and 11th grade classes in the Spring of 1999. The students were asked two questions: (1) What features of SLCA are most special to you? (2) How has the learning experience at SLCA most impacted you? The student responses to each question were analyzed for themes and shared with faculty and administration.

The most special features of the learning experience at SLCA to students were as follows:

- ***Abundance and Use of Computers*** – There are many more computers available to students, and they use them all the time.
- ***Teamwork*** – Students are expected to work together with a lot of different students to take on projects and solve problems.
- ***Positive Student/Teacher Relations*** – Teachers really care for students.
- ***Internships and Field Experiences*** – Students are involved in real work experiences and see connections to learning in school.
- ***Hands-On Learning*** – Students know how to do things.
- ***Safe Workplace Environment*** – Learning occurs in a safe environment and one that is like the workplace outside of school.
- ***Learning at Own Pace*** – Students are expected to manage their time and learn to learn on their own.
- ***Freedom*** – Students are expected to voice their opinions, and the opinions are valued.

The most important impacts of SLCA on students were as follows:

- ***Use of Computers*** – Students are very competent in use of computers and up-to-date software for learning.
- ***Working in Teams*** – Students know how to work as small group, both to lead and follow.
- ***Managing Own Learning*** – Students can organize and learn on their own.
- ***Preparing for a Career*** – Students have a good start in selecting and preparing for a career.
- ***Building Self-Confidence*** – Students are confident in being able to do things and think on their feet.
- ***Developing Academic Skills*** – Students have solid academic training.
- ***Dealing with Change*** – Students are comfortable with change.

Teachers' Experiences

The source of information on teachers' experiences was a focus group interview with five teachers in the Spring of 1999 conducted by the author of this report. The teachers

were asked what was special about the learning experience at SLCA. The features that teachers highlighted were as follows:

- ***Use of Technology in Learning*** – Students and teachers are expected to use technology as an integral part of the learning experience.
- ***Application of Learning to Real-Life Situations*** – Students are expected to be able to apply their learning in context of workplaces and the community.
- ***Orientation to Careers*** – Students are guided in making decisions about career interests.
- ***Personalization of Learning*** – Students have individualized learning plans and are expected to express their opinions.
- ***More Freedom and Responsibility Given to Learner*** – Students are expected to take more initiative in learning.

The salient features of the SLCA as expressed by students and teachers are consistent with the guiding principles of the school (St. Louis Career Education District, 1998a) which include the following three components: (1) an emphasis on school-to-career with access to career pathways; (2) knowledge delivered in a contextual manner, assessed by performance, and applied in a relevant and rigorous manner through real-world experiences; and (3) that technology is a valuable tool to enhance, enrich, and deliver instruction. These principles were applied to the planning for the SLCA as reflected in the following goals for the school:

- To assist students in their preparation for life's work—broadly conceived and narrowed through learning and time
- To preserve a full-range of secondary and postsecondary learning opportunities
- To expand educational and work opportunities for all students based on regional forecasts on employment demand and skill-competency trends
- To set generic academic core subject matter knowledge and increasingly specific occupational skills through integrated classroom and work-based learning
- To focus on individual student choice in learning formats with selections based on broad-based, career-oriented curricula
- To emphasize long-term, industry-based, student-applied learning projects for inquiry through continued articulated agreements and partnerships with business and industry, regional employers, and postsecondary institutions

- To provide rich experiential learning opportunities that include student empowerment and engagement through numerous field-based career exploration and development studies, plus inquiry and problem-based learning projects. (St. Louis Career Education District, 1998a, p. 16)

As is evident, career pathways are a major organizer of learning for the SLCA. The St. Louis Career Education District (1998a) describes career pathways as follows:

- Career paths reflect groups of careers that match multiple, required job skills—similar students' interests and knowledge requirements.
- Career paths show clusters of occupations that require different educational levels.
- Career paths provide a way of initially helping students decide on a general career area, not a specific occupation.
- Career paths provide an exploratory tool that helps students examine a career focus without being locked into a specific occupation or training.
- Career paths focus on ultimate gainful employment in an occupation. (p. 17)

Student Characteristics

The SLCA was designed to be a school of 400 students, grades 9-12. The plan was to start with the 9th grade and admit 120 students each year (assuming there would be some who would not come or stay), and by the fourth year, a total of about 400 students would be enrolled. The courts, however, ordered that the first class should consist of a double class of 240 9th grade students to give the school more of a presence. As it turned out, 240 students were admitted for 1996-1997 (first year) from 850 applicants; 120 were admitted in 1997-1998 and in 1998-1999.

The demographics of each class was as the court had ordered—50% white and 50% black (only a few other students from other ethnic groups were enrolled). Also, 50% were female, and 50% male in 1997-1998; 40% of students were from St. Louis County but outside St. Louis City and 60% from the city. About 60% of the students participated in free and reduced lunch programs, indicating that their families were economically poor.

IMPACT ON LEARNING

Guiding Questions

- What is the impact of SES/SLCA on student performance while in school?
- What is the impact of SES/SLCA on student performance after leaving school?

School of Environmental Studies

Impact on learning at SES will be presented in terms of both indirect and direct measures of performance. Indirect measures will include motivation-related indicators, such as discipline problems, attendance, and drop-out rates. Academic performance will include academic achievement tests, knowledge production, and commitment to values.

Motivation

All areas of student attitudes and behaviors are positive for the SES, both in comparison to other schools in their district and in the state of Minnesota. Attendance rates are higher for SES, the rate of discipline cases is much lower for SES versus the home high school, and graduation rates are higher for SES. The attendance rates and dropout rates for SES are shown in Table 4. The size of SES and the school climate of SES are stated as being the major factors that play an important role in student motivation.

Table 4
Daily Attendance and Dropout Rates for 1996-1997 and 1997-1998

Year	*Daily Attendance*	*SES*	*Dropout Rate District*	*Minnesota*
1996-1997	95%	0.25%	1.7%	3.7%
1997-1998	96%	0.00%	NA	NA

Source: New American Schools, 1999

Academic Performance

A study was completed at the school during the 1997-1998 school year. SES 11th and 12th grade students had identical grade point averages as compared to all district 11th and 12th grade students. The importance of this finding is twofold. The school truly does draw a wide variety of students that reflect the other high school populations. The school also has higher test scores for an equivalent grade point average. The results of the two academic tests given by the district (i.e., ACT and PSAT) are shown in Tables 5 and 6 comparing SES, district, state, and national average scores for the 1996-1997 school year (SES, 1999a). Table 5 shows that the SES scores on all areas of the examination exceed state and national averages. These differences are significant because of the compactness of the scoring range. Table 6 shows data from the PSAT for 1996 to 1998. There was no data available for the writing area from 1996. Scores on the verbal and math examinations are well above the national averages and have improved to surpass the Minnesota average. A disappointingly low writing score in 1997 led to some curricular changes that were reflected in an improved 1998 writing score. Few Minnesota students take the PSAT examination because it is not the examination of choice for most midwestern colleges and universities.

Table 5
ACT Test Scores for 1996-1997 and 1997-1998

Year	*% Students Taking Test*	*Sample*	*English*	*Math*	*Reading*	*Science*	*Composite*
1996-	60%	SES	22.6	22.1	24.7	24.1	23.3
1997		District	NA	NA	NA	NA	22.4
		Minnesota	21.2	21.8	22.5	22.5	22.1
		National	20.3	20.6	21.3	21.1	21.0
1997-	65%	SES	22.5	22.5	24.6	24.2	23.6
1998		District	21.2	NA	NA	NA	22.9
		Minnesota	21.2	22.2	22.3	22.5	22.2
		National	20.4	20.8	21.4	21.1	21.0

Table 6
PSAT Scores for 1996-1998

Year	*% Eligible Students Tested*	*Sample*	*Verbal*	*Math*	*Writing*
1996	30%	SES	52.9	52.3	
	(54)	Minnesota	49.9	52.6	
		National	48.2	49.2	
1997	32%	SES	51.1	52.2	49.1
	(66)	Minnesota	50.5	52.1	51.2
		National	48.7	49.0	49.4
1998	30%	SES	53.0	54.0	60.0
	(61)	Minnesota	50.1	51.8	50.6
		National	47.8	48.6	48.0

An article published in the *St. Paul Pioneer Press* in 1998 described the level of high school student participation in Advanced Placement courses during 1997 for high schools located in the east metropolitan area of Minneapolis-St. Paul (1997 East Metro, 1998). SES had 95 students participating, a very high percentage of their students, and 65% of the students scored "3"s, "4"s, and "5"s, which easily put them in the top ⅓ of the high schools for which data were presented.

Knowledge Production

The production of knowledge is a key component to the SES student education. Knowledge products at SES connect students with the world around them. The products are meaningful, rigorous, and real-world, and they are often presented to an expert in the field.

Commitment to Values

SES students attend the school by choice. Information is provided upfront about the high expectations of the school, the rigor that is part of the day-to-day operations, and the variety of projects that connect students with the local community. The vision, mission, and belief statement that is the foundation of SES is shown in Appendix III.

Performance After Leaving School

- ***Postsecondary Education*** – During the past two school years (1996-1997, 1997-1998), 89% of SES students planned to attend a 2-year or 4-year institution, and 11% of the SES students plan to work, go into the military, or travel. This compares to a district average of 80% to 85%, depending upon the school year. No follow-up data were collected for this study, but next year, more information will be gathered.
- ***Employment Data*** – Because SES is only in its fourth year of existence, employment data is not yet available.
- ***Community Involvement*** – SES has heard from many of its graduates that they continue to connect with their local community.

St. Louis Career Academy

The impact of the SLCA on academic performance comes from two major sources: (1) Hutchins (1999) and (2) the annual reports of the St. Louis Career Education District (1997, 1998b). As with the SES, information is provided on indirect measures and direct measures of performance.

Indirect Measures of Impact on Learning

Table 7 shows the attendance and dropout rates for the SLCA for 1996-1997 and 1997-1998. The dropout rate is very low, and while the attendance rate was high for the first year of the SLCA, it has lowered for the second year.

Direct Measures of Impact on Learning

Hutchins (1999) presents separate analyses of academic impact for school years 1996-1997 and 1997-1998. The same information is shown in the St. Louis Career Education District's annual reports. For 1996-1997, two types of data are presented. The first is scores on the Test of Adult Basic Education (TABE) selected as a nationally normed test to measure students' academic skills. The TABE was selected because it was thought to be more sensitive to the learning expectation of SLCA, particularly relating to the demonstration of academic skills that are closely connected to employment. The results

are shown in Table 8. The results indicate that the first class of 9th graders, on average, scored at the 8.7 grade level in mathematics and 9.9 level in reading.

Table 7

Enrollment, Attendance, and Dropout Rates at St. Louis Career Academy

Characteristic	*1996-1997*	*1997-1998*
Enrollment	240	335
Attendance Rate	93%	86%
Dropout Rate	1.26%	2.39%

Source: St. Louis Career Education District, Annual Report, 1996-1997 and 1997-1998

Table 8

Performance of First 9th Grade Class of Students (Class of 2000) at the End of the First Year of Enrollment at the St. Louis Career Academy on the Test for Adult Basic Education

Subject Area	*Average Grade Level Equivalence*
Math Comprehension	8.3
Math Applications	7.4
Language	8.6
Spelling	10.1
Average Battery	8.2

Source: St. Louis Career Education District, Annual Report, 1996-1997, p. 2

Table 9

Performance Gains of First 9th Grade Class of Students (Class of 2000) at the End of the First Year of Enrollment at the St. Louis Career Academy on the Placement Tests of the Destinations Computer-Based Instructional Program, Black Students Versus All Other Students

Subject Area/Student Group	*Posttest Score*	*Grade Level Gain from the Pretest*
Mathematics		
Black Students	8.8	5.5
All Other Students	8.6	5.4
Reading		
Black Students	9.1	5.6
All Other Students	9.1	5.4

Source: St. Louis Career Education District, Annual Report, 1996-1997, p. 3

Similar positive results were posted from the placement tests that were a part of the computer-based institutional program, Destinations. The placement tests given at the end of the second semester for the 1996-1997 school year indicated the average grade level equivalence scores of 8.7 in mathematics and 9.1 in reading. An important subgroup analysis showed that black students achieved gains and final scores similar to all other students (see Table 9).

For the 1997-1998 school year, the annual report of the St. Louis Career Education District (1998) indicated that the SLCA started using a nationally standardized academic achievement test (Iowa Test of Basic Skills) to judge the performance of students. Table 10 shows test score results comparing Fall 1997 with Fall 1998 performance for 10th and 11th graders. The composite percentage indicates how SLCA student performance compares to the national average of all taking the test across the country. As shown in Table 10, SLCA students perform at about the 40th percentile, except for the 10th graders performance in the fall of 1998 that was at the 53rd percentile. The interpretation of these results (by the St. Louis Career Education District) includes the observation, "The fact that Academy students' achievement mirrors the academic performance of the student population of the nation as a whole is important because the achievement of vocational students is usually below that of their nonvocational peers" (p. 4). Also as shown in Table

10, the performance for black students and all other students was about equal. The interpretation of this finding by the St. Louis Career Education District is, "Given the fact that black students in many other schools do not do as well as their nonblack counterparts, the Academy seems to be accomplishing something that few other schools have been able to achieve" (p. 5).

Table 10

Performance First 9th Grade Class (Class of 2000) and Second 9th Grade Class (Class of 2001) at the St. Louis Career Academy on the Iowa Test of Basic Skills, Black Students and All Other Students

Class	*Composite Percentile Fall 1997 (Form G)*	*Composite Percentile Fall 1998 (Form M)*
Class of 2000 (11th graders)	41	40
Black Students	40.1	39.7
All Other Students	41.3	39.7
Class of 2001 (10th graders)	43	53
Black Students	45.7	51.7
All Other Students	50.5	55.3

Source: St. Louis Career Education District, Annual Report, 1997-1998

RECOGNITION BY OTHERS

Guiding Question

- How has SES/SLCA been received by others?

School of Environmental Studies

The SES has had an impact upon a number of visitors that have come to the school to learn about the curriculum and programming. The reasons visitors come to the school are as wide and varied as the reasons for replicating components of the SES program.

Schools that have been influenced include the following:

- Milton Hershey School (Hershey, Pennsylvania)
- St. Louis Career Academy (St. Louis, Missouri)
- Kapolei High School (Kapolei, Hawaii)
- Dutch Study House (the Netherlands)
- Interdistrict Downtown School (Minneapolis, Minnesota)
- Zoo High School (Lincoln, Nebraska)

Recognitions received by the SES include the following:

- Recognition as model learning environment by the American Institute of Architects
- Recognition during School Modernization Day by the U.S. Department of Education
- Recognition as New American School by the U.S. Department of Education
- Newspaper articles (See list of articles in Appendix IV.)
- Article in Harvard Education Letter
- Feature in *The Wall Street Journal*
- Article in journal, *Technology and Learning*
- Inclusion in Dutch videotape on educational reform
- Inclusion in North Central Regional Educational Laboratory videotape on educational reform
- Recognition on the conference program of the American Association of International Education

- Recognition as school that is implementing Breaking Ranks, published by the National Association of School Principals.

St. Louis Career Academy

In 1997, the SLCA was designated one of five models for "New Urban High Schools" and a "New American School" by the U.S. Department of Education, Office of Vocational and Adult Education.

The purpose of the New Urban High Schools Project was to identify, assist, and disseminate new models and practices for high schools located in urban areas in the context of educational reform. The project used a nomination process to locate potential schools to be included in the network. Twenty-two schools in 16 cities were visited in the selection process. In the end, five schools were selected for inclusion based on the following criteria:

- Demonstrating academic and vocational integration for the whole school
- Extensive use of work-based learning and internships
- Extensive use of mentoring
- Attention to career awareness
- Attention to postsecondary links
- Using supportive learning environments

Designation as a New American School and New Urban High School meant considerable publicity and more intensive planning by the school. The New Urban High School involvement provided the school with access to several national experts on educational reform in a mentoring role, $30,000 in discretional funds each year, and the opportunity to network with the staff of other schools who were part of this project.

The SLCA was invited to participate in the Washington University Quality School Program. The program provided staff development and assistance in applying quality management principles and practices in a school context.

The SLCA received a significant amount of press coverage during its first few years, both positive and critical. A listing of some of the articles is shown in Appendix V.

LESSONS LEARNED AND FUTURE DIRECTIONS

School of Environmental Studies

Lessons learned and future directions for the SES were developed in a small-group interview involving students, staff, and community representatives.

Lessons Learned

The lessons that were noted as being the kind of advice the interviewees would pass on to other schools interested in developing a new school similar to SES are as follows:

- Interdisciplinary teaching and learning takes more time and thought than disciplinary work, but the product is substantially better.
- It takes diligence and perseverance to keep the partners communicating and believing in the vision.
- Early discussion of what kind of school is wanted is critical.
- Make what is taught matter in real life.
- Students and staff must be open to developing strong relationships; teachers can be much more effective when they know students' personalities and are genuinely concerned about them.
- Best practices must be situationalized to each school setting.
- Develop a shared mission, vision, and set of beliefs for the school; the resulting passion and successes create energy.

Future Directions

When asked about future directions for SES, the school representatives interviewed suggest the following changes for consideration:

- Become even more involved with the community.
- Increase partner relationships to provide learning opportunities for students.
- Stay on top of current educational and environmental research.
- Be open to and encourage research on the school.
- Make elective courses more interdisciplinary and a part of the house structure.
- Be dynamic, changing as the needs of students and society change.

St. Louis Career Academy

Lessons Learned

The lessons learned in planning and operating the SLCA for its first three years are as follows:

- The integration of academic and vocational education is feasible, but a great deal more development work must be done than was done at the Academy in order to meet expectations.
- On the other hand, teachers who pull the integration off and, at the same time, create a problem-based learning environment that actively involves students in deciding what they learn and how they learn can be incredibly successful.
- A career path approach to vocational education is feasible and more easily developed than a full integration of academic and vocational education.
- Business and industry are fully ready for such a change and will support it so long as they aren't asked to do too much and the institutional situation is stable.
- Assigning a group of teachers to a group of students and having them work collaboratively together over several years is a powerful force for change in education so long as the teacher-teams consist of no more than seven or eight members and they have control over their own schedule and space.
- Never underestimate the power of an entrenched system threatened with extinction.
- A new school, particularly if it is all or partly beyond the control of an existing district, needs to be aware of the enormous number of policies and regulations that its administration and governance structure will have to deal with in the first year of operation.
- Technology can have a very powerful and beneficial impact on education, particularly on student learning.
- Don't count on vendors, particularly in the field of educational technology and publishing.
- Even if they are new and hired to function in a new, already designed environment, teachers have to have time to "buy in."
- Recognize that even after the design is established and a core group of teachers has bought into it, new teachers and staff arriving at a later time will have to go through the buy-in and mutual adaptation process for themselves.
- Getting publicity is helpful when the story is positive; when it is negative, the previously positive awareness the press has of the school tends to magnify the negative events that do occur.

- For the most part, expect teachers entering the new system to be loyal, hard-working, and committed to the students; they won't disappoint you.
- The devil is always in the details, and the schedule is a particularly difficult detail.
- Without extra resources, time, and administrative flexibility, change is very difficult, if possible at all.
- High expectation for inner-city urban students and the ability to participate in a creative, supportive environment can change lives.
- Even if the school is new and the teachers newly hired, the system is heavily driven by the model, which everyone has in their heads about how a traditional school works.
- Setting up work-based learning situations, at least in the beginning, requires that teachers receive additional staff support to design the work experience, prepare students, monitor the experience, and reinforce the students' learning.
- Setting up and operating small-scale high school modules of 400 is feasible and does contribute to a sense of intimacy.
- The development of an interdisciplinary, integrated curriculum needs to be relatively complete before a school starts up; alternatively, a core group of staff must have sufficient time to develop expeditiously.
- Contact and support from other schools that have embarked on similar efforts is helpful; it is difficult to go it alone. (Hutchins, 1999, pp. 119-121)

Future Directions

The SLCA is now in transition from being its own separate governing board to being a part of the St. Louis Public Schools (SLPS). The Academy has a new principal and several new staff for the 1999-2000 school year. The SLPS are moving forward with building a new facility to house a vocational high school to be occupied by the Academy. Some of the preliminary plans for the vocational high schools developed by the Career Academy Planning Committee (1999) are as follows:

- The proposed school would enroll 800-1,000 students.
- The school would have three broad vocational pathways: (1) business systems and technology, (2) health and human services, and (3) industrial technology.
- The pathways were selected based on the current offerings of the Special School District, the SLCA, the Gateway Institute of Technology, the proposed career academies set to open in the St. Louis Public School high schools, and the long-term projections for economic development within the community and state.

- The pathways are to be interconnected with students being able to move across them.
- The pathways are to be fully integrated into a four-year academic program meeting all of the academic requirements of the St. Louis Public Schools and new Carl Perkins legislation.
- Students are expected to gain practical experience through senior-year internships and college articulation agreements.
- Students are expected to meet national skill standards and local competencies.
- Students are expected to leave the school well-equipped to enter college, the work setting, technical school, apprenticeships, or the armed services.

CONCLUSIONS

The conclusions that follow address two areas. The first concerns the degree to which the design specifications for NDCHS were implemented at the SES and SLCA. Before drawing conclusions about impact on learning, it seems reasonable to ascertain in some form the degree to which the features of NDCHS were actually put to work in these schools. To remind the reader of the design specifications for NDCHS, the specifications are presented in the section. Following the analysis of implementation, conclusions are drawn about impact on learning. Of course, cause and effect cannot be established from the data presented in this report; only relationships can be pointed out.

About Implementation of NDCHS

In "New Designs for Learning" (Copa, 1999), the desired features of the educational institution are projected as a set of design specifications for several elements of the school. These elements include the following:

- Learning Context
- Learning Signature
- Learning Expectations
- Learning Process
- Learning Organization
- Learning Partnerships
- Learning Staff and Staff Development
- Learning Environment (Technology and Facilities)
- Learning Celebration
- Learning Finance

The design specifications for each of these elements represents the recommended features of a school meeting the expectations of NDCHS. These specifications were recently updated (Copa, Plihal, Birky, & Upton, 1999) based on the original recommendations (Copa & Pease, 1992) and application to actual school sites over the past ten years.

Rating of Degree of Implementation of NDCHS

To give an indication of the degree to which the design specifications recommended in NDCHS have been implemented in the two school sites being studied, a comparison was made of the design specifications for NDCHS as representing the ideal school and the list of specifications for the two sites provided previously in this report. In addition to the descriptions of the design specifications for the two sites, the author also had the experience of having visited each of the school sites several times. The comparison was made for each design element, and an overall rating was given using the following scale (see Table 11):

* Have not included attention to any of the design specifications.

** Have included attention to at least half of the design specifications at a noticeable (sometimes happening, some intensity) level.

*** Have included attention to at least half of the design specifications at a very obvious (always happening, very intensive) level.

**** Have included attention to most of the design specifications at a noticeable level or higher.

***** Have included attention to most of the design specifications at a very obvious level.

The ratings were also reviewed by the key informants at each site to gain further perspective and validity.

Using this procedure, the overall ratings given for each school site and design element are shown in Table 11. As is evident from the table, both the SES and SLCA have implemented the design specification of NDCHS with considerable intensity and scope. Most high schools would fall much lower than these two schools in this rating process. Overall, the SES shows more intensity in its implementation with the most intense elements being Learning Signature, Learning Process, Learning Organization, Learning Staff and Staff Development, and Learning Environment (facilities). The element of NDCHS with least intensity of implementation is Learning Finance. For the SLCA, the element with highest intensity of implementation is Learning Environment (technology), and the areas of least intensity are Learning Signature, Learning Process, Learning Partnerships, Learning Celebration, and Learning Finance.

Table 11

Assessment of Implementation of Design Specification in NDCHS at School of Environmental Studies and St. Louis Career Academy

Design Element	*Summary Assessment of SES*	*Summary Assessment of SLCA*
Learning Context	***	***
Learning Signature	****	**
Learning Expectations	***	**
Learning Process	****	***
Learning Organization	****	***
Learning Partnerships	***	**
Learning Staff and Staff Development (Staffing)	****	***
Learning Staff and Staff Development (Staff Development)	****	***
Learning Environment (Technology)	***	****
Learning Environment (Facilities)	****	***
Learning Celebration	***	**
Learning Finance	**	**

Impact of NDCHS

The actual impact of NDCHS on learning at the SES and SLCA can not be determined in a cause and effect sense from the design of this assessment. Rather, what can be determined is whether or not two events happen together, implementation of NDCHS, and positive impact on learning. The SES and SLCA represent very different socioeconomic and political contexts and ways of initiating NDCHS. The SES is located in an upper middle class suburb of a large midwest metropolitan area and draws its students from a single, relatively homogeneous school district. The SLCA is located in the inner city of a large metropolitan area with a much lower socioeconomic context and draws its students from several districts, both inner city and suburban, that are very diverse on several dimensions. SES operated from the beginning as an 11th and 12th grade school.

SLCA started with the 9th grade and added a grade each year; it has all grades for the first time during the 1999-2000 school year. As is evident from the data presented in the previous section on Impact on Learning for the two schools, however, both of the schools have implemented design features of NDCHS in significant ways and are generally performing well in terms of indirect and direct measures of learning.

Indirect Measures of Learning

Both the SES and SLCA have high attendance rates and low dropout rates in contrast to other public schools in their geographic area and schools serving students with similar socioeconomic backgrounds. For the SLCA, these indicators will have more meaning when the first class graduates.

Direct Measures of Learning

Both the SES and SLCA have shown very positive academic performance in contrast to other schools. For SES, the contrast is to other schools in their district and state. For SLCA, the contrast is to other schools in the country and expectations for gains in grade equivalency, comparing black students to all other students. Both the SES and SLCA will be able to measure the impact on learning more thoroughly when they begin to use the statewide testing program now under development in each of their respective states and are able to collect follow-up information on the success of graduates in postsecondary experiences, including further education and employment.

Reflections

To help put the experience and findings of this study into the historic context of educational reform over the past 100 years, the findings of Tyack and Cuban (1995) in their book, *Tinkering Toward Utopia: A Century of Public School Reform*, will be used as a lens. Tyack and Cuban conclude, "Change where it counts the most—in the daily interactions of teachers and students—is the hardest to achieve and the most important.... To do this requires not only political will and commitment but also an accurate understanding of schools as institutions" (p. 10). The section of this report describing the background, perspectives of students and teachers, lessons learned, and future directions of

the two schools reinforces the importance of understanding a school in depth in order to realize significant change in the daily interaction of teachers and students.

Tyack and Cuban go on to claim, "The key problem is to devise plausible policies for improvement of schooling that can command the support of a worried public and the commitment of the educators upon whom reform must rely" (p. 39). Each of the schools has a rich history of involvement with the public and educators in extensive planning for the schools and communications during implementation.

Tyack and Cuban note, "Over long periods of time, schools have remained basically similar in their core operations, so much so that these regularities have imprinted themselves on students, educators, and the public as the essential features of a 'real school'" (p. 7). A review of the features of the two schools included in this study using the NDCHS design framework gives a clear picture of the great distance these schools have traveled in moving far beyond the typical "grammar of schooling" referred to by the authors.

Tyack and Cuban advance the recommendation, "Since schools do change reforms, often in unforeseen ways. . . . [i]nstead of being ready-made plans, reform policies could be stated as principles, general aims, to be modified in the light of experience, and embodied in practices that vary by school or even by classroom" (p 83). Perhaps this is an appropriate and realistic way in which to view how the two schools adapted the recommendations of NDCHS, not as gospel or template, but as hypotheses to be tested and blended with current working practices and the realties of how much change can be accommodated at any one time. This approach would be consistent with one of Tyack and Cuban's major conclusions concerning the history of educational reform, "Tinkering is one way of preserving what is valuable and reworking what is not" (p. 50).

The measures of learning achievement used in this study are very traditional (as these are the ones we are most asked about and the ones readily available) and may sell new educational designs very short. Tyack and Cuban advance the vision, "The major aim of reform is to improve learning, generously construed as rich intellectual, civic, and social development, not simply as impressive test scores" (p. 136). I would only add "vocational" to their list of worthy developmental aims if life is to be meaningful and coherent.

IMPLICATIONS

Implications of the analysis of the data collected in this study are presented as they relate to improving professional practice, policy development, and further research.

Professional Practice

- ***Anticipatory Planning*** – Successful implementation of NDCHS will benefit from practices that include considerable planning prior to implementation and directly involve those who will be responsible for the implementation.
- ***Staff Development*** – Successful implementation of NDCHS will benefit from practices that provide a significant commitment in time and resources for training that models the learning experience desired for students.
- ***Shared Vision*** – Successful implementation of NDCHS will benefit from practices that lead to a deeply shared sense of and commitment to the kind of school that is to be put in operation by all of the key stakeholders in the school.
- ***Perseverance*** – Successful implementation of NDCHS will benefit from practices that include diligence and tenacity in moving all design features into play.
- ***Communications*** – Successful implementation of NDCHS will benefit from practices that ensure continuous sharing, both inside and outside the school, of the vision, desired features, progress, needs, and successes of the design features of NDCHS.
- ***Networking*** – Successful implementation of NDCHS will benefit from practices that ensure close interaction with other schools who have or are putting in place the design features of NDCHS.

Policy

- ***Additional Resources*** – Successful implementation of NDCHS will benefit from policies that provide supplemental funds to cover the extra work required to change school practices in the direction manifested by the design specification in NDCHS

- ***Exceptions to Rules*** – Successful implementation of NDCHS will benefit from policies that provide opportunities to deviate from standard operating rules and regulations for schools as part of the implementation process.
- ***Detailed Plan*** – Successful implementation of NDCHS will benefit from policies that encourage very detailed planning of school design before it is implemented to ensure that the design is coherent and allow energy to focus on implementation rather than design and implementation at the same time.
- ***Extended Time*** – Successful implementation of NDCHS will benefit from policies that recognize the complexity and challenge in school reform and sustain support for the needed changes over a long time period (i.e., ten years).
- ***Demanding Accountability*** – Successful implementation of NDCHS will benefit from policies that require the development and use of assessment systems and procedures for monitoring and checking on the progress in implementing the design features of NDCHS.

Further Research

- ***Sustaining Change*** – Successful implementation of NDCHS will benefit from further research that identifies the barriers and facilitators to long-term commitment and support by key stakeholders to the design features of NDCHS.
- ***Creating Public Support*** – Successful implementation of NDCHS will benefit from further research to identify ways to develop public awareness and support for the design features of NDCHS.
- ***Validating Promising Practices*** – Successful implementation of NDCHS will benefit from further research to identify the most effective strategies to deliver on the design features of NDCHS.
- ***Needed Leadership Skills*** – Successful implementation of NDCHS will benefit from further research to describe the competencies needed by educational leaders who are putting the design features of NDCHS into operation.
- ***Anticipating Organizational Learning Curve*** – Successful implementation of NDCHS will benefit from further research to describe and understand the stages that a school goes through in implementing the design features of NDCHS and the kind of support needed at each stage.

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APPENDIX I

Example of Requirements for a Certificate of Mastery in a Career Pathway as Prerequisite to Internship Placement at St. Louis Career Academy

A Certificate of Initial Mastery (CIM) is a credential that is earned in vocational education to certify occupational skill competence and performance goal attainment through school-based learning prior to beginning internships (work-based learning). The certificate is designed around minimum performance standards of attendance in school, number of tardies, disciplinary records/actions, and approval by the school principal and vocational instructors. In addition, specific core competencies in each vocational studio program must be verified as being mastered at the "initial" level by each student's vocational instructor. After a junior student has met all criteria for a CIM, this certificate will serve as a portable credential of skills that the student can add to resumes and performance portfolios for future education and employment. In addition, the Academy staff uses the CIM to "certify" the ability and competence of a student for worksite internship experience and/or employment.

Criteria for the Certificate of Initial Mastery in Computer Technology

Attendance – Less than 10 days of unexcused absences during the previous school semester (or not more than five days during any nine-week quarter's grading period)

Punctuality – Tardy for their vocational studio not more than eight times during the previous nine-week quarter's grading period

Behavior – Approved by school administration for issuance of this certificate on the basis of their proven positive behavior and no serious discipline history on record

Employment Competence – Achievement of the following core competencies indicating internship and initial employment readiness, as recorded by the vocational instructor:

- The student will demonstrate intermediate knowledge of the nature of technology, its impact, function, and application in current and future context.
- The student will demonstrate the ability to solve problems with technology using software and hardware systems.
- The student will make ethical-based decisions about the development and use of technology and technological resources.

- The student will perform basic technological processes and develop and successfully complete technology-based projects while using safe, effective, legal, and creative ways.
- The student will explore career aspects in technology and apply knowledge to perform tasks representative of job applications at the entry level.
- The student will demonstrate an understanding of the importance and ability to work effectively in teams to complete successful projects.
- The student will effectively manage time and resources, while demonstrating ability to work independently to meet deadlines.

APPENDIX II

Table of Contents to Student Reference Guide to Foundation Skills at School of Environmental Studies

- Guidelines for Working in a Group
- Socratic Seminar Guidelines
- Steps in Critical Reading
- Active Reading Guidelines
- Journalizing
- Field Writing
- Document Conventions at SES
- Guidelines for the Writing Process
- Checklist for Effective Writing
- Word Processing Guidelines
- Data Collection Guidelines
- Research Process Guidelines
- Documentation Style Manual
- Checklist for Effective Speaking
- Doing the Zoo

APPENDIX III

Vision, Mission, and Beliefs of School of Environmental Studies

Vision

The SES at the Minnesota Zoo is a community of leaders learning to enhance the relationships between people and their environments.

Mission Statement

The School of Environmental Studies at the Minnesota Zoo will develop active citizen leaders who are . . .

- Environmentally informed.
- Self-perpetuating learners.
- Connected to the local and global community.

To foster leadership, we will . . .

- Draw our purpose for all decisions and actions directly from the common vision and synergistic environment which define our school.
- Provide a strong academic background integrating discipline-based and interdisciplinary studies.
- Partner with multiple organizations to extend authentic learning experiences into a variety of real-world experiences.
- Encourage intellectual and emotional risk-taking.
- Model thoughtful, informed decisionmaking.
- Encourage sustainable environmental actions.

We believe . . .

- Educational opportunities must be shaped by the needs and interests of our students.
- Perspectives gained through intercultural communications strengthen relationships between people.
- An inquiry-based interdisciplinary learning environment deepens understanding.
- A thorough understanding of environmental systems and their interrelationships is essential.

- Leadership is defined by action.
- Academic challenge is critical to the development of learners.
- Effective communities value collaboration, flexibility, and respect.
- Access to technology empowers learning.
- Active, experiential learning is fundamental.
- Our work is vital and relevant.

December 12, 1997
Wd/SES/Faculty/Vision

APPENDIX IV

Listing of Articles About the School of Environmental Studies

- "Zoo High" Could Become Reality Under Proposal for School on Zoo Grounds, *St. Paul Pioneer Press*, October 2
- Board Supports Concept of Zoo High School
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- Principal Named for New Zoo School, *Burnsville Sun-Current*, August 31, 1994
- Zoo School Principal Welcomes Challenges of Opening New Facility, *Rosemount Thisweek*, September 25, 1994
- Building of Zoo School Begins, *Star Tribune*, October 4, 1994
- Learning Firsthand, *St. Paul Pioneer Press*, October 5, 1994
- Breaking New Ground, *Rosemount Thisweek*, October 9, 1994
- Spotlight Dan Bodette, *Apple Valley-Rosemount-Eagan Sun-Current*, October 19, 1994
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- Zoo School Becomes Reality in District 196, *Irish Impressions*, November 1994
- School Is a Zoo: 196 Goes Wild, *Eagan Express*, November, 1994
- Recruitment Begins for Zoo School, *Apple Valley-Rosemount-Eagan Sun-Current*, November 9, 1994
- Zoo School Teachers Expect a Diverse Group of Students, *Apple Valley Thisweek*, November 13, 1994
- If You Believe School's a Zoo, You Haven't Seen Zoo School, *St. Paul Pioneer Press*, November 16, 1994
- The Foundation of Education, *Apple Valley Thisweek*, December 4, 1994
- "Zoo School" a Popular Choice, *Burnsville Sun-Current*, December 21, 1994
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- Zoo School Running on Schedule, *Apple Valley-Rosemount-Eagan Sun-Current*, March 8, 1995
- From Apple Valley to the Zoo, *Curriculum Products News*, November/December, 1995

- Environmental Summit Provides Unique Learning Opportunity, December 1995
- So What's So New About the Zoo School?, *Irish Impressions*, December 8, 1995
- Dig that Dirt, *Apple Valley-Rosemount-Eagan Sun-Current*, May 31, 1995
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- "Zoo School" Offers a Variety of Learning Opportunities, *Apple Valley Thisweek*, August 13, 1995
- Excitement Grows as Zoo School Nears Opening, *Apple Valley-Rosemount-Eagan Sun-Current*, August 16, 1995
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- A Zoo School Nature Area, *Green Teacher*, January, 1996
- Networking for the Future, *Inter Ed*
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- Enviro-Summit Gives Youth Hands-on Experience, *Dakota County Update*, Fall, 1995
- Students Test Skills for Surviving Big Chill, *St. Paul Pioneer Press*, February, 1996
- Zoo School Studies Reuse Versus Recycling, *Minnegasco In Touch*, March, 1996
- Bess Is Out: Hounding Schoolboard Does No Good, *St. Paul Pioneer Press*, March 21, 1996
- This School Is a Zoo, *Electronic Learning*, March/April, 1996
- Hopes for District 196 "Zoo School" Are Being Realized, 300 Students applied for 200 Spaces Available in 1997-98, *Apple Valley Thisweek*, December 29, 1996
- At Zoo School, Environment Is the Name of the Game, *Lakeville Life and Times*, April 27, 1996
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- Zoo School Students Get to See Caribbean Conservation Efforts Up Close, *Apple Valley Thisweek*, November 16, 1997
- Yucatan Trip Offers Learning Adventure to "Zoo School" Students, *Apple Valley Thisweek*, December 7, 1997
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- Students Clean Up Rosemount, *Rosemount Town Pages*, April 24, 1998
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APPENDIX V

Listing of Articles on St. Louis Career Academy

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